CLAIMS

1. An anhydrous crystalline Form I of 1-Cyclopropyl-6-fluoro-8-methoxy-7-(3-methyl-1-piperazinyl)-4-oxo-1, 4-dihydroquinoline-3-carboxylic acid (Gatifloxacin).

2. The anhydrous crystalline Form I of Gatifloxacin according to claim 1, having a X-ray powder diffraction pattern with peaks at 7.763, 10.196, 12.854, 13.615, 14.112, 14.932, 16.333, 17.013, 19.722, 20.491, 21.456, 23.593, 23.765, 24.44, 25.927, 27.558, 28.65, 30.496, 30.872 and 31.477 two theta (degrees).

3. The anhydrous crystalline Form I of Gatifloxacin of claim 2, having an X-ray powder diffraction pattern substantially as depicted in Figure (2).

4. The anhydrous crystalline Form I of Gatifloxacin of claim 1, having a differential scanning colorimetry thermogram which exhibits a characteristic endo peak at 188.35°C.

5. The anhydrous crystalline Form I of Gatifloxacin of claim 4, having a differential scanning colorimetry thermogram substantially as depicted in Figure (3).

6. The anhydrous crystalline Form I of Gatifloxacin of claim 1, having identified characteristic peaks at about 3327.7 and 1721.0 cm^1 in the Infra red Spectrum.

7. The anhydrous crystalline Form I of Gatifloxacin of claim 1, having an Infra red Spectrum substantially as depicted in Figure (4).

8. A process for preparing anhydrous crystalline Form I of 1-Cyclopropyl-6-fluoro-8-methoxy-7-(3-methyl-1-piperazinyl)-4-oxo-1, 4-dihydroquinoline-3-carboxylic acid (Gatifloxacin), which comprises the steps of:

i) refluxing azeotropically a hydrated form of Gatifloxacin in a water-immiscible aromatic or aliphatic hydrocarbon solvent or a ketone solvent;

ii) cooling the reaction mixture of step i) accompanied by stirring of the mixture until the solid mass crystallizes;

iii) isolating the solid obtained in step ii) by conventional methods;

iv) drying the solid obtained in of step iii) at 30-70°C;

v) dissolving the solid isolated in step iv) in a linear or branched chain substituted or unsubstituted alkanone solvent at reflux temperature;

vi) cooling to 0-5°C;

vii) filtering and washing with a linear or branched chain substituted or unsubstituted alkanone solvent; and

viii) drying at 30-90°C to obtain anhydrous crystalline Form I of Gatifloxacin.

9. The process according to claim 8, wherein the aromatic or hydrocarbon solvent is selected from benzene, toluene, xylene or cyclohexane.

10. The process according to claim 8, wherein the ketone solvent is selected from methyl ethyl ketone, methyl isobutyl ketone or methyl tertiary butyl ketone.

11. The process according to claim 8, wherein the aromatic hydrocarbon solvent is toluene.

12. An anhydrous crystalline polymorph Form II of 1-Cyclopropyl-6-fluoro-8-methoxy-7-(3-methyl-1-piperazinyl)-4-oxo-1, 4-dihydroquinoline-3-carboxylic acid (Gatifloxacin).

13. The anhydrous crystalline polymorph Form II of Gatifloxacin according to claim 12, having an X-ray powder diffraction pattern with peaks at 5.931, 11.248, 11.906, 12.426, 14.116, 15.833, 16.276, 17.991, 18.667, 19.646, 21.073, 21.507, 22.509, 23.249, 24.287, 24.943, 26.918, 27.571, 27.807, 28.504, 29.389, and 39.841 degrees two theta.

14. The anhydrous crystalline polymorph Form II of Gatifloxacin of claim 12, having X-ray powder diffraction pattern substantially as depicted in Figure 5.

15. The anhydrous crystalline polymorph Form II of Gatifloxacin of claim 12, having a differential scanning colorimetry thermogram which exhibits a characteristic endo peak at 187.71 °C.

16. The anhydrous crystalline polymorph Form II of Gatifloxacin of claim 12, having differential scanning colorimetry thermogram substantially as depicted in Figure 6.

17. The anhydrous crystalline polymorph Form II of Gatifloxacin of claim 12, having identified characteristic peaks at about 1620.9 and 1728.3 cm^1 in the Infra red Spectrum.

18. The anhydrous crystalline polymorph Form II of Gatifloxacin of claim 12, having an Infrared Spectrum substantially as depicted in Figure 7.

19. A process for preparing anhydrous crystalline polymorph Form II of 1-Cyclopropyl-6-fluoro-8-methoxy-7-(3-methyl-1-piperazinyl)-4-oxo-1, 4-dihydroquinoline-3-carboxylic acid (Gatifloxacin), which comprises the steps of:

i. refluxing azeotropically a hydrated form of Gatifloxacin in a water-immiscible aliphatic hydrocarbon solvent;

ii. cooling the reaction mixture of step (i) accompanied by stirring of the mixture until the solid mass crystallizes;

iii. isolating the solid obtained in step (ii) by conventional methods; and

iv. drying the isolated solid of step (iii) with or without vacuum at a temperature of 30-70°C, to obtain anhydrous crystalline polymorph Form II of Gatifloxacin.

20. A process according to step i) of claim 19, wherein the aliphatic hydrocarbon solvent is cyclohexane.